

(w/enc' .)
Distribution: /LC use

Docket No. 40-8027

SEP 24 1975

RBChitwood
EDFlack
JERothfleisch
Local PDR
NRC PDR
Docket File
MF:MCEP R/F
NMSS R/F

Kerr-McGee Nuclear Corporation
ATTN: Mr. W. J. Shelley, Director
Regulation and Control
Kerr-McGee Center
Oklahoma City, Oklahoma 73125

Gentlemen:

After publication of the Final Environmental Statement relating to your Sequoyah Uranium Hexafluoride Plant we received the enclosed letters dated April 2 and May 30, 1975, from the Department of Interior (DOI). As discussed in these letters, the DOI questioned the assumptions used in evaluating the magnitude and resulting environmental impact from the raffinate leakage. In addition, the DOI recommended that additional studies be conducted.

In order that the NRC staff can adequately assess the environmental impact caused by the raffinate leakage, an updated consolidated report of the geology, hydrology, and monitoring history is needed; accordingly, it is requested that Kerr-McGee prepare a report that compiles the relevant data on this issue. In Attachments I and II, the NRC staff has developed a report outline and discussions of the scope of the suggested report for your consideration. The development of this report will perhaps provide sufficient information so that additional field studies will not be necessary.

If you have any questions concerning the report, please contact either R. B. Chitwood at telephone number 301-492-7272 or E. D. Flack at telephone number 301-492-7427.

Sincerely,

Original Signed by
R. B. Chitwood

Richard B. Chitwood, Chief
Fuel Cycle Environmental
Projects Branch
Division of Materials and Fuel
Cycle Facility Licensing

8512180343 750924
PDR ADOCK 04008027
C PDR

Enclosure:

Ltrs fm DOI dtd 4/2/75
& 5/30/75

CRESS/MNB	OFFICE	MF:FCEP	MF:FCEP	MF:FCEP		
MC#0629		EDFlack:ps	JER	JER		
	SURNAME	EDFlack	JERothfleisch	RBChitwood		
9 21.75	DATE	9/22/75	9/23/75	9/23/75		

SEP 24 1975

ATTACHMENT I

REPORT OUTLINE

REPORT ON WASTE RETENTION PONDS AT KERR-McGEE CORPORATION SEQUOYAH PLANT

- I. Introduction
 - A. Statement of problem
 - B. Scope and organization of report
- II. Site Characteristics
 - A. Location, topography, drainage
 - B. Geology
 - 1. Rock units
 - 2. Soils
 - 3. Structure
 - C. Hydrogeology
 - 1. Water bearing properties of rocks and soils
 - 2. Occurrence of groundwater
 - 3. Groundwater quality
 - 4. Groundwater use
- III. Construction and operation of disposal ponds
 - A. Design and construction
 - B. Operational history
 - C. Future plans
- IV. Water Quality Monitoring
 - A. Monitoring network and procedures
 - B. Analysis of monitoring data
- V. Conclusions and Recommendations

Discussion of Report Outline

I. Introduction

- A. Statement of problem - this section should include a brief chronological discussion beginning with the discovery of the pond leak and concluding with the most recent data concerning the pond leak. The discussion should include such information as the comments by the Department of Interior (DOI) on the Final Environmental Statement.
- B. Scope and organization of report - lay out for the reader the content and report arrangement.

II. Site Characteristics

- A. Location, topography, drainage - Describe for the reader the geography and physiography of the plant site. This is discussed in the environmental report and statement. A topographic map with contour intervals of 10' and a scale of 5" = 1000' is included as Exhibit F of Kerr-McGee's April 1970 feasibility report on the disposal well. A site map is included as Exhibit H, Enclosure 1, of the May 10, 1971 Application for Amendment to License No. SUB-1010, Docket No. 40-8027. The site map, Enclosure 1, also references the availability of drawings showing boring logs, soils profiles, and the settling basins and lagoon. The locations of all trenches, test holes and monitor wells that are discussed later should be on one master map that also shows the topography, drainage, basins, and lagoons.
- B. Geology - The principal content of this section should be a detailed discussion of the geology of the surficial deposits and of the outcropping Atoka Formation to the depth of the first saline water units. A discussion on the shallow geology will have to be sufficient to satisfy the DOI comment on the inadequacy of geologic information that appears on page C-17 of the FES.

As an appendix to this section, the logs of all shallow boreholes should be compiled. Profiles such as Fig. 12, p. 87 of the Supplemental Environmental report are useful, as is the shallow west-to-east cross-section (Exhibit E, Appendix B) included in the April 1970 injection well feasibility report. Any data on original water levels in test holes should be compiled as well as the geology.

SEP 24 1975

C. Hydrogeology

1. Water bearing properties of rocks and soils - Discuss the character of the units described in B as far as porosity, permeability, thickness, and areal extent. Any other factors such as ion exchange capacity, fracturing, etc., should be included that will help in interpreting how and where fluids that might leak from a pond would travel.
2. Occurrence of groundwater - Discuss the vertical and lateral distribution of subsurface water at and near the plant. Existing discussion in the various reports consist of one or two pages, is very general, and is principally based on a publication by Marcher. In order to estimate the effects of pond leakage, it will be necessary to develop a picture of the specific conditions at the plant site, including elevation of the unconfined groundwater table, elevation of any perched water tables, and the elevation of at least the shallowest confined fresh or brackish water aquifer and its piezometric surface. It is not known to what extent this can be accomplished with existing information, but it should be done in as much detail as possible to show the adequacy of the data on hand. This section will be critical to the determination of the need for possible additional site exploration.
3. Groundwater quality - The quality of uncontaminated shallow groundwater should be carefully documented. It is presently unclear exactly what the natural quality of shallow groundwater in the plant area originally was. Monitor well data shown in the environmental report for the wells in the vicinity of the disposal ponds begin in 1971, when the plant was already in operation. The fact that preoperational samples were not taken from the monitor wells cannot now be corrected, but ranges of values and averages from wells outside of the plant area should provide a reasonable basis for comparison. It can be argued that samples from most of the monitor wells do not show hazardous levels of contamination, but it is still important to know what quality changes may have occurred during operation so that patterns of movement of the contaminants can be established.

SEP 24 1975

4. Groundwater use - Because the significance of water quality depends on its use, a brief documentation should be provided of the location of nearby water users, the source of supply, volumes withdrawn, and the end use made of the supply. This is also necessary so that a reader unfamiliar with the area can judge the extent to which flow may be directed to areas of withdrawal.

III. Construction and Operation of Disposal Ponds

Discussion is provided in Supplements 1 and 2 to the Environmental Report concerning the construction and operation of the raffinate ponds; however, confusion still exists concerning some details. Exactly when was each pond constructed and what is its individual history of use, including dates and any notable incidents regarding the pond. How much waste has gone into each pond and can a mass balance of the present contents be made? What will be done with each of the Ponds in the future and will they possibly be sources of groundwater contamination, even after they are no longer used?

IV. Water Quality Monitoring

- A. Monitoring network and procedures - In this section, each sampling point in the water monitoring network should be described sufficiently to permit the reader to analyze its geologic and hydrologic significance. Geologic logs for the monitoring wells should have been provided in Section II-B and water levels in Section II-C-2, but a discussion of the wells should be included here. How often is each well sampled, how is it sampled, how are the samples stored, combined, analyzed, etc.? What incidents, if any, have occurred during the operation of the network that should be particularly noted because of their effect on the monitoring results.
- B. Analysis of monitoring data - Perhaps the weakest parts of the various existing reports are the discussions of the monitoring data. This was noted in comments by the Department of Interior in letters dated April 2, 1975, and May 30, 1975, and in the comments by Dr. Warner, an NRC consultant, which were attached to a letter dated December 6, 1972, to W. J. Shelley from J. E. Rothfleisch.

SEP 24 1975

V. Conclusions and Recommendations

The outline developed above is intended to allow for an orderly analysis. It is essential that no conclusions be reached in the final section that are not warranted by factual data in the body of the report. If it is not possible to develop a convincing analysis of the past, present, and future effects of the ponds on groundwater, then the existing deficiencies in information should be pointed out and recommendations made for the necessary action to correct them in the shortest time at the least cost.

40-8027

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

In Reply Refer To:
ER-74/539

APR 2 1975

Dear Mr. Chitwood:

Thank you for transmitting copies of the final environmental statement for Kerr-McGee Nuclear Corporation's Sequoyah Uranium Hexafluoride Plant, Sequoyah County, Oklahoma, which we received on February 13, 1975.

One of the main comments by the Department of the Interior on the draft environmental statement concerned the admitted leakage of raffinate waste from one of the retention ponds. While more information has been provided in the final environmental statement, there remain a few points which require further clarification.

On page V-7 it is stated that "The leak was confined to a relatively narrow band, possibly to a single fissure terminating in well no. 2314." It is unrealistic to believe that all the leakage from the pond is finding its way to a monitoring well which, by chance, intercepts the fissure through which leakage takes place. Also in this connection, we are not clear about the significance of the data shown on pages D-16 and D-29. The data implies that the leakage from the pond is computed as the rate at which water re-enters monitoring wells previously bailed out.

We question the conclusions on pages D-17 and D-18 about the leak in raffinate pond no. 2 and, in particular conclusion no. 6 which indicates that the usage of storage ponds is a successful means of long-term disposal of raffinate liquid waste even though conclusions no. 1 admits to radioactive waste leakage from one of the waste storage ponds.

We believe the additional comments starting on page 60 and the reports also referenced on that page do not provide sufficient detailed information to support the conclusions reached regarding the impermeability of the pond liners and the underlying geology to prevent undetected leakage from the raffinate ponds into the groundwaters or the Illinois Rivers.

CONSERVE
AMERICA'S
ENERGY

Dupe of
~~851210A179~~
2PP

0668

The computations shown on page D-66, regarding concentration of contaminants to the Illinois and the Arkansas Rivers are presumably based on the data collected at the monitoring well and unsupported assumptions as to the area through which leakages take place. In addition, the average flows of the rivers are used in the above computations, whereas the low flows of the rivers should have been used to provide a more meaningful measure of contamination hazards. Also, the radioactivity shown should be total river radioactivity obtained by adding that originating from the leak to that present in the river at low flow.

In summary, it appears that some of the assumptions underlying the assessment of raffinate liquid waste leakage may not be true and it is suggested that a more thorough hydrogeologic investigation of the problem be carried out.

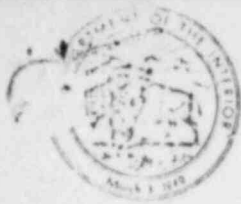
We hope these comments will be helpful to you.

Sincerely yours,



Deputy Assistant Secretary of the Interior

Mr. R. B. Chitwood
Chief, Technical Support Branch
Directorate of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20545



United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

PEP ER 74/539

MAY 30 1975

Dear Mr. Chitwood:

As a result of the conference you attended on April 24, 1975, with Departmental personnel (attendance list attached), we have the following comments regarding the leak from the raffinate pond. It should be understood that the following comments are only generalized and that planning of the study will require a detailed review of all available data going beyond our purview at this time.

The additional study should assess the pattern of ground-water flow in the vicinity of the pond and thus should include wells reaching the ground-water table because most of the existing wells are too shallow. The wells should be constructed (by nesting, for example) so that they can be screened for selected aquifer depths. The study should include accurate head measurements referred to a common datum and analysis of water samples from the various screened zones.

Should the data indicate seepage to the aquifer, water modeling techniques should be used to simulate the spreading of the pollutant as well as, if needed, pumping well distribution for the recovery of the pollutant from the aquifer.

It is our understanding that the license renewal will include such conditions as are described above to ascertain the extent, rate and direction of the leak from the raffinate ponds.

We hope these comments will be helpful to you.

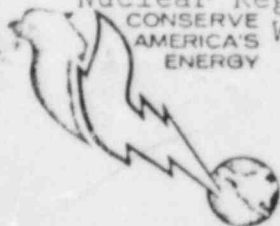
Sincerely yours,

Deputy Assistant

Secretary of the Interior

Stanley R. Rowland

Mr. R. B. Chitwood
Chief, Technical Support Branch
Directorate of Licensing
Nuclear Regulatory Commission
CONSERVE
AMERICA'S
ENERGY
Washington, D. C. 20555



Save Energy and You Serve America!



1133

2pp

Meeting - Kerr McGee

4/24/75

<u>NAME</u>	<u>ORGANIZATION</u>	<u>TELE. NO.</u>
Lillian K. Stone	DOI-OEPR	343-6128
J.E. Rothfleisch	USNRC	492-7427
Eric L. Meyer	USGS	860-6976
Richard Chitwood	USNRC	492-7272
Ennio V..Giusti	USGS	860-6976